ABSTRACT

The present invention discloses methods for multiplexed cellular assays. The methods can be used for a simultaneous quantitation of transcription levels from multiple promoters, multiple drugs, or for monitoring effects on multiple protein-protein interactions. These methods make use of reporter gene constructs that couple a single reporter enzyme coding sequence with one or more promoter regions, and a set of probes that are subject to degradation by the reporter enzyme, producing a set of reporters that can be separated from each other by differences in their mobilities. Multiplexed assays are achieved by combining a set of cell populations, wherein each population contains a distinct reporter gene construct and a distinct probe. Various treatments are then carried out on the mixture of cells. Treatments that induce transcription from specific promoters will cause synthesis of the reporter enzyme in that particular cell population, leading to degradation of the corresponding probe. The generation of specific reporters is determined by electrophoresis, or other means of measuring mobility, and is correlated with an effect of the treatment on transcription from a defined promoter.